

I CLAIM AS MY INVENTION:

1. An antenna arrangement for a magnetic resonance apparatus comprising:

a first antenna group including at least one first group antenna element;

a second antenna group, in adjacent relationship to said first antenna group but separated from said first antenna group, including at least one second group antenna element; and

a first group coupler antenna part in said first antenna group and a second group coupler antenna part in said second antenna group, said first group coupler antenna part and said second group coupler antenna part interacting with each other due to said adjacent relationship of said first and second antenna groups to form, by inductive coupling, a common boundary antenna element of said first and second antenna groups, said common boundary antenna element being inductively decoupled from said at least one first group antenna element and said at least one second group antenna element.

2. An antenna arrangement as claimed in claim 1 comprising a reactive component, selected from the group consisting of capacitive components and inductive components, connected in at least one of said first group coupler antenna part and said second group coupler antenna part, said reactive component having a value that equalizes respective currents in said first group coupler antenna part and said second group coupler antenna parts, if said boundary antenna element were isolated from said at least one first group antenna element and said at least one second group antenna element.

3. An antenna arrangement as claimed in claim 2 wherein said reactive component is variable to equalize said respective currents.

4. An antenna arrangement as claimed in claim 1 wherein said first group coupler antenna part and said second group coupler antenna part are configured to equalize respective magnitudes of respective coupling inductances between one of said first group coupler antenna part and said second group coupler antenna part, and one of said at least one first group antenna element and said at least one second group antenna element, and between the other of said first group coupler antenna part and said second group coupler antenna part and said one of said at least one first group antenna element and said at least one second group antenna element.

5. An antenna arrangement as claimed in claim 4 comprising a reactive component, selected from the group consisting of capacitive components and inductive components, connected in at least one of said first group coupler antenna part and said second group coupler antenna part, said reactive component being variable to equalize said respective magnitudes of said respective coupling inductances.

6. An antenna arrangement as claimed in claim 1 wherein said first group coupler antenna part comprises a coupler antenna part of a first type, and wherein said second group coupler antenna part comprises a coupler antenna part of a second type, and wherein said common boundary antenna element comprises a single coupler antenna part of said first type and a single coupler antenna part of said second type.

7. An antenna arrangement as claimed in claim 1 wherein said first and second antenna groups are adapted to receive a magnetic resonance signal having a frequency, and wherein said first group coupler antenna part and said second group coupler antenna part are configured to have a self-resonant frequency that is detuned with respect to said frequency of said magnetic resonance signal.

8. An antenna arrangement as claimed in claim 1 wherein said first and second antenna groups are adapted to transmit a signal in a transmission mode and to receive a magnetic resonance signal, having a frequency, in a reception mode, and wherein at least one of said first group coupler antenna part and second group coupler antenna part comprises a tuning device which tunes a self-resonant frequency of said boundary antenna element to said frequency of said magnetic resonance signal in said reception mode, and detunes said self-resonant frequency of said boundary antenna element with respect to said frequency of said magnetic resonance signal in said transmission mode.

9. An antenna arrangement as claimed in claim 7 wherein at least one of said first group coupler antenna part and second group coupler antenna part comprises a tuning arrangement to tune the self-resonant frequency of the coupler antenna part comprising the tuning device to said frequency of said magnetic resonance signal, without the other of said first group coupler antenna part and second group coupler antenna part being coupled thereto.

10. An antenna arrangement as claimed in claim 1 wherein each of said first group coupler antenna part and said second group coupler antenna part comprises a first antenna section proceeding substantially in an antenna plane formed by said at least one first antenna element and said at least one second antenna element, and a second antenna section that protrudes from said antenna

plane, the respective second antenna sections of said first group coupler antenna part and said second group coupler antenna part being disposed at a predetermined distance from each other.

11. An antenna arrangement as claimed in claim 9 wherein said first antenna section of said first group coupler antenna element overlaps with said at least one first group antenna element and wherein said first antenna section of said second group coupler antenna part overlaps with said at least one second group antenna element, to inductively decouple said at least one first group antenna element and said at least one second group antenna element from each other.

12. An antenna arrangement as claimed in claim 1 wherein at least one of said first group and second group coupler antenna parts is galvanically contact-free.

13. An antenna arrangement as claimed in claim 1 comprising a first housing containing said first antenna group and a second housing, separate from said first housing, containing said second antenna group, said first housing and said second housing being positionable in a plane relative to each other to automatically configure said first group coupler antenna part and said second group coupler antenna part to produce said inductive coupling to form said common boundary antenna element.

14. An antenna arrangement as claimed in claim 13 wherein said first antenna housing and said second antenna housing respectively comprise cooperative positioning elements to cause said antenna housings to be positioned relative to each other to automatically cause said first group coupler antenna part and said second group coupler antenna part to produce said inductive coupling to form said common boundary antenna element.

15. An magnetic resonance antenna system comprising:

a plurality of antenna groups, including at least a first antenna group having at least one first group antenna element and a second antenna group having at least one second group antenna element, each of said antenna groups in said plurality of antenna groups being separated from each other;

said first antenna group including a first group coupler antenna part and said second antenna group including a second group coupler antenna part;
and

said first antenna group and said second antenna group being selectively positionable in an adjacent relationship to configure said first group coupler antenna part and said second group coupler antenna part to inductively couple with each other to form a common boundary antenna element of said first and second antenna groups, said common boundary antenna element being inductively decoupled from said at least one first group antenna element and said at least one second group antenna element.

16. An magnetic resonance antenna system as claimed in claim 15 wherein said first group coupler antenna part comprises a coupler antenna part of a first type, and wherein said second group coupler antenna part comprises a coupler antenna part of a second type.

17. An magnetic resonance antenna system as claimed in claim 16 wherein each of said first and second antenna groups comprises a coupler antenna part of said first type and a coupler antenna part of said second type.

18. An magnetic resonance antenna system as claimed in claim 17 wherein the respective coupler antenna parts of said first type and said second type are disposed at different edges of the respective first and second antenna groups.

19. A method for coupling two antenna groups to acquire a magnetic resonance signal, wherein each of said antenna groups comprises at least one group antenna element and a coupler antenna part, said method comprising the steps of:

positioning the respective antenna groups relative to each other in a predetermined arrangement; and

configuring the respective coupler antenna parts in the respective antenna groups so that, when said antenna groups are positioned in said predetermined arrangement, the respective coupler antenna parts are inductively coupled with each other and form a common boundary antenna element of the respective antenna groups, said common boundary antenna element being inductively decoupled from said first group antenna element and said second group antenna element.